National Weather Service Reno, NV

Volume 3, Issue 1

Summer 2011

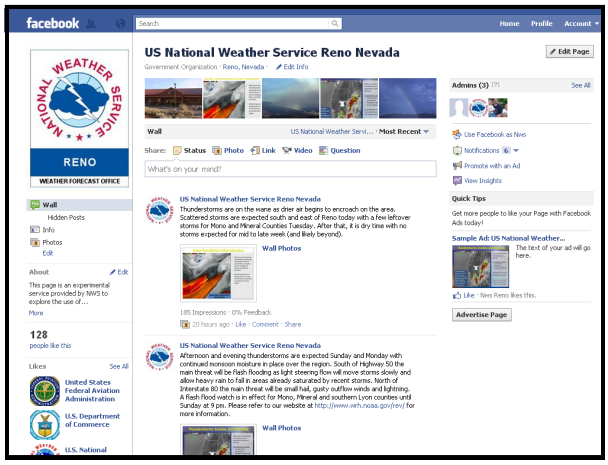
The Gold and Silver Spotter

Thanks for the Information Updates!

Thank you everyone for taking the time to contact us and update your information. You are now all receiving the newsletter via email and helping us save paper, time, and money. If you have any questions, comments, or suggestions regarding this change, please let us know! Hope that you enjoy!

Snowy Winter Leads to Full Lakes and Reservoirs this Summer

After a winter that seemed to never give up and seeing significant mountain snow into June, it finally warmed up and all the melting snow increased flows through rivers, bringing many lakes and reservoirs to near full. As of the end of July, Lake Tahoe is only half a foot shy of flood stage and should hold steady until evaporation begins to overtake any lingering snowmelt runoff. Other lakes and reservoirs that are near full include: Boca, Independence, Stampede, Lahontan, and Topaz. With some snow still left in the mountains above 7500 feet, more runoff can be expected through the remainder of the summer.



Join NWS Reno on Facebook!

Our office has a new Facebook page and we would like you to join us. We'll be posting forecast information, interesting facts and picture from the area, weather safety tips, and much more! You can also leave comments and post weather updates from your area. Just keep in mind spotter reports should still be called in for real-time information.

Inside this issue:

Our Mission:

"The National Weather Service (NWS) provides weather, hydrologic and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community."

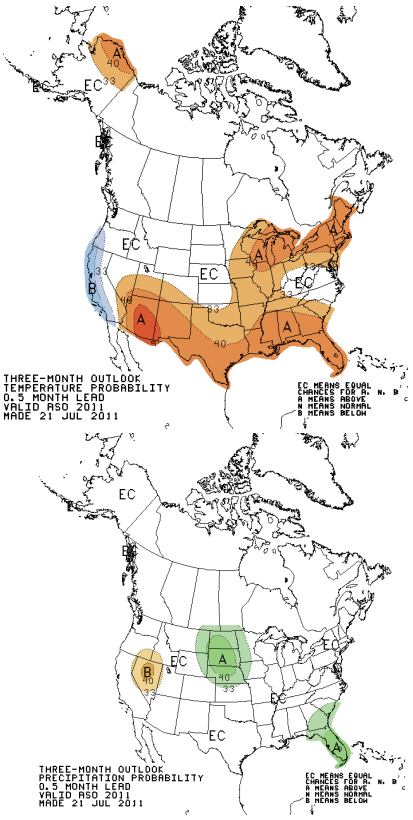
ENSO Update-El Niño or La Niña?

The answer is neither. We are currently in an ENSO (El Niño Southern Oscillation) neutral state. This means that the sea-surface temperatures across the equatorial pacific are near normal.

Despite being ENSO-neutral, the atmospheric circulations are still reflective of a La Niña which is why we continue to see troughs pushing through the west.

Ensemble models are indicating that we may be heading back into a weak La Niña going into 2012 and the Climate Prediction Center (CPC) has issued a La Niña Watch.

So what does this mean for our weather here in Eastern California and Northwestern Nevada? Climatologically there are no strong signals which would lean our temperatures and precipitation either wetter than normal or drier than normal. The 3 month temperature and precipitation outlook for August, September, and October is shown to the right and shows equal chances to slightly below normal for temperatures and precipitation compared to average.



eSpotter

In this age of electronic communications, we would like to offer you a new way of reporting significant weather conditions. Welcome to eSpotter!

eSpotter allows you to report significant weather conditions online by filling out a blank electronic report sheet (Figure 2). The report is then securely transferred into our internal system where we can check it in real-time. This greatly differs from email reports which we may not see for multiple days. This program was developed to enhance and increase timely and accurate online spotter reports and communication between the spotters and the local office.

Reporting via the spotter hotline is always available 24/7/365, but now eSpotter is a great alternative. If you wish to use this new technology, you can request an account on eSpotter.weather.gov (Figure1) . Once you request an account, an email will be sent to the office for approval. Only current spotters can be approved for eSpotter. Once approved you will be given a login and can submit spotter reports using the same criteria as always.

Figure 1

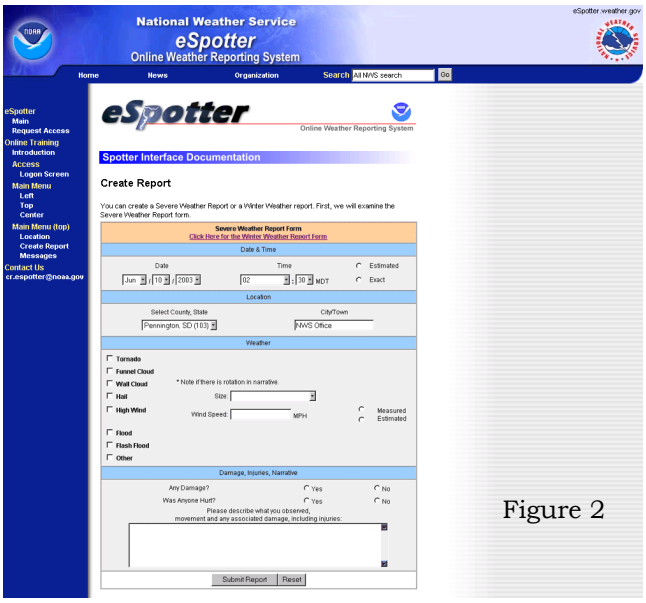


Figure 2

How Does Doppler Radar Work?

The Doppler Weather Radar is a fantastic tool that many are familiar with, but it can be hard to understand how it all works. This will hopefully give you a better basic understaning of how our radar works and what some of the limitations we have here locally are.

The Radar basically sends out an electronic pulse (burst of energy) and then listens for a while (listening time) before sending out another pulse. If the pulse hits something, part of it will bounce off and be returned to the radar. This is referred to as a "radar return" and is correlated to a color table assigned to these values. This is the familiar radar picture most are used to seeing. During the first "listening time", the first pulse has had time to go out a certain distance, hit something, and return before another pulse is sent. The timing between these two pulses are different with the first pulse allowing for a longer listening period to hit returns further away and a shorter second pulse to get a different picture of where the radar returns are located.

The one problem with this is that the radar on its own does not know exactly which return is from which pulse. This is where software comes in. The software can vary what is known as the "phase" of each pulse. This is like giving each one a unique identification number. As the radar receives returns, it determines which return came from which pulse by matching the phase of the pulse. By using different "listening times" between pulses along with varying the phases, the radar is able to make sense of virtually all the returns.

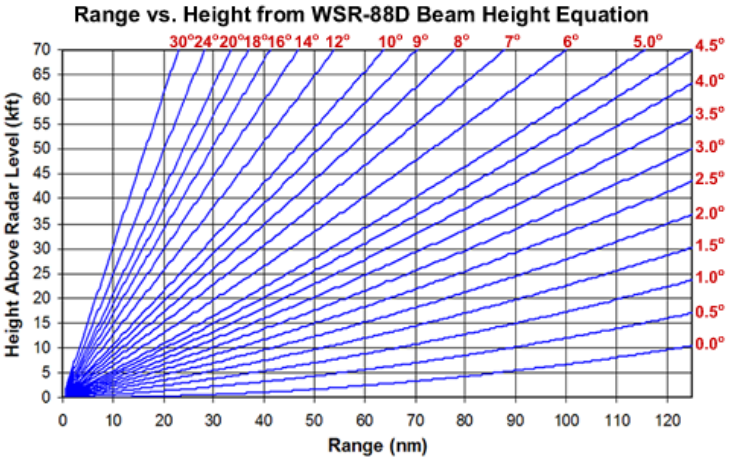
One of the limitations of being in the Western States is the mountainous terrain that surround us. The radar pulses do not go through mountains and this is known as "beam blockage". The NWS Reno's Weather Radar is located on the top of Virginia Peak which helps to alleviate many of the beam blockage problems, but does cause other problems detecting lower-topped storms.

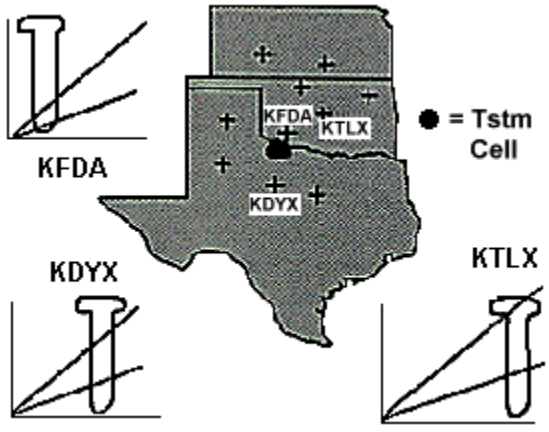
The radar sends out these pulses through various elevation slices to "see" different portions of the storm. (See graphic to the right). The further you are from the radar, the higher up in the atmosphere the radar will sample the storm. So, for example, during the winter when many storm tops are below 15000 feet AGL, if you lived in Mono County where the lowest beam comes in around 19000 feet AGL, the radar would completely miss the storm.

An example of how different radars will "see" different parts of the same storm is on the bottom right. Each of the 3 radars, KFDA, KDYX, and KTLX are sampling the same storm, but the beams are hitting the thunderstorm cell in different locations.

For more information please see: http://forecast.weather.gov/jetstream/doppler/how.

Above: The NWS Reno Doppler Radar, KRGX, on top of Virginia Peak, approximate elevation 8300'





Fire Weather Update

Due to the very wet fall, winter, and spring across the region, fire season has been off to a slow start in the area. We have had a few fires break out, including one just across the highway from our office, but most have been smaller and were contained quickly. As we continue into August and September, fuels will continue to dry and any new fire starts are likely to be larger than those seen recently. Above 8000 feet in the Sierra there may not be much of a fire season as there is still plenty of snow still lingering there.

The Southwestern states have seen quite the fire season already this year including the largest fire in Arizona's history. The Wallow fire burned approximately 538,000 acres through Arizona and a small portion of Western New Mexico. Two Incident Meteorologists (IMETs) from our office were dispatched to Arizona to help forecast the weather on the wildfires. For more information about IMETs, please see the article on the next page.

It remains unseen as to what the rest of the summer will bring for fire season, but typically fire season goes through late September or early October, and is dependent upon the first rains and snows of the fall. Due to the late start of fire season, it is expected that a near or below average amount of acreage will burn this year. Of course, one large event could change this.

Above: The Gardella Fire at Highway 395 and Parr Ave as viewed from the Reno NWS office, July 7, 2011.

Heat Index Chart

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	126	130					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Streuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Should you be concerned with the heat index? Luckily here in Eastern CA and Northwestern NV, we live in a dry climate where humidity is rarely an issue. Just be aware that if you travel to humid states, the combination of heat and humidity will feel much warmer than you would be used to in a dry heat.

What Should be Reported

While it is always important to report all significant weather conditions to your National Weather Service office, the following items are the most likely to need reporting this time of the year:

- Heavy Rain, especially on recent (the past few years) burn scars
- Flash Flooding
- Strong Winds—anything greater than 45 mph (not including ridges) from thunderstorms or a big wind event
- Hail—all hail reports are helpful, but mainly hail greater than 1/2 half inch in diameter. (Keep in mind severe hail needs to be 1 inch in diameter or larger, which is quarter-sized).
- Funnel Cloud—Make sure that it is rotating
- Tornado—Make sure it is rotating and is in contact with the ground




What is an IMET?

Incident Meteorologists, or IMETs for short, have been helping protect the nation's responders for nearly 90 years. There are about 80 IMETs across the nation who are specially trained to go to wildfires and other incidents to give weather briefings and forecasts to the incident responders and command staff. The meteorologist's forecasts ensure the safety of operations and allow responders to plan operations taking into account one of the most challenging aspects of an incident, the weather.

The first "mobile" weather unit was dispatched to a fire in 1916, consisting of a "team" of a meteorologist and his horses which carried the weather equipment into the field. The benefit of having an onsite meteorologist became quickly apparent. In the 1930s, as cars became more reliable, the first mobile fire weather vans were created. The concept of using a fire weather "vehicle" (meaning the instrumentation was a part of the vehicle), was used all the way into the 1970s with upgrades of vehicles and radios as they became available. Presently, IMETs have a large case that houses everything they need on a fire and can be quickly dispatched around the country. They frequently camp at the incident site and can easily work 16 hours a day for up to 2 weeks straight.

An IMET's main obligation is to cover wildfires, however, they can also respond to other incidents such as oil and chemical spills, terrorism drills, and other incidents of national importance. Some recent large events IMETs have been dispatched to outside of fires include the Oil spill in the Gulf Coast and helping with tornado recovery from the major outbreak in Alabama this past spring.

The Reno National Weather Service office has two fully trained IMETs who have both lent their support to major fires and other incidents through the years.

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Working Together to Save Lives

Upcoming Spotter Talks:

We will be holding spotter talks across the area this fall, likely September into October. The dates and times will be announced soon and emailed out as well as posted to our webpage. Please feel free to contact us if you have any questions.

Weather Humor Corner

The Science of Severe Weather—How Does Hail Form?

Hail is precipitation that is formed when updrafts in thunderstorms carry water droplets and cloud condensation nuclei upward into the extremely cold areas of the upper atmosphere. As water freezes around the nuclei, a small hailstone is formed. Hailstones grow by collision with super-cooled water drops. Super-cooled water drops are liquid drops surrounded by air that is below freezing, which is common in thunderstorms.

There are two methods by which the hailstone grows, wet growth and dry growth, which produce the layered look of hail. In wet growth, the hailstone nucleus (a tiny piece of ice in this case) is in a region where the air temperature is below freezing, but not super cold. Upon colliding with a super-cooled drop the water does not immediately freeze around the nucleus. Instead liquid water spreads across tumbling hailstones and slowly freezes. Since the process is slow, air bubbles can escape resulting in a layer of clear ice.

With dry growth, the air temperature is well below freezing and the water droplet immediately freezes as it collides with the nucleus. The air bubbles are frozen in place leaving cloudy ice.

The hail nucleus is carried aloft by the thunderstorm updraft and begins to grow in size as it collides with other small hail pieces and super-cooled water droplets. Sometimes the hailstone is blown out of the main updraft and begins to fall to earth. If the updraft is strong enough, it will move the hailstone back into the cloud where the process can be repeated several times, allowing the hailstone to grow. In all cases, when the hailstone is too heavy to be supported by the updraft, it falls to earth. The stronger the updraft, the larger the hailstone that can be produced by thunderstorms.